

Appln No. 10/731,710  
Amdt date October 5, 2005  
Reply to Office action of July 14, 2005

REMARKS/ARGUMENTS

The above amendments and these remarks are responsive to the Office Action mailed on July 14, 2005. Claims 1, 21 and 23 have been amended. Claim 12 has been canceled. Claims 27-34 have been added and are directed to subject matter disclosed in the application as originally filed. No new matter has been added. Claims 1-11 and 13-34 are now pending in this application. Reconsideration on the basis of the above amendments and remarks below is kindly requested.

The Examiner rejected claims 1-8, 10, 11, 14 and 20 under 35 USC § 102(b) as being anticipated by Wentorf, Jr. et al. According to the Examiner, Wentorf, Jr. et al. discloses providing an enclosure comprising a refractory metal, disposing a metallic liner within said enclosure, placing a hard material selected from cubic boron nitride and PCD materials within said metallic liner and sintering the hard material fusing the metal to the PCD material. Wentorf, Jr. et al., according to the Examiner, further discloses that the metallic liner is selected from a group comprising Co.

Claim 1 as amended is directed to a method for forming an ultra hard layer comprising disposing a metallic liner within an enclosure "said liner having a thickness in the range of 0.005mm to 3mm . . ." The alleged liner 13 of Wentorf, Jr. et al. is a mass of metal bonded carbide which appears to be relatively very thick. Wentorf, Jr. et al. does not disclose that the alleged liner has a thickness of 0.005 to 3mm as required by claim 1. As such, applicant submits that claim 1 is not anticipated by Wentorf, Jr. et al.

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Claims 2-8, 10, 11, 14 and 20 are directly or indirectly dependent from claim 1. Claim 1 is now believed to be in condition for allowance over Wentorf, Jr. et al. As such, claims 2-8, 10, 11, 14 and 20 are also in condition for allowance over Wentorf, Jr. et al. as being dependent from a claim allowable over Wentorf, Jr. et al. and for the additional limitations they contain therein. For example, claim 6 requires "disposing a substrate material within said enclosure." Claim 7 further requires that "during sintering the liner and at least a compound of the ultra hard material feed stock form a eutectic having a melting temperature lower than the melting temperature of a eutectic of the substrate material." Claim 8 requires that "during sintering the liner and at least a compound of the ultra hard material feed stock in the enclosure form a eutectic having a melting temperature about the same as that of a eutectic of the substrate material." Claim 14 requires that the "sintering produces an ultra hard material layer that is substantially free of fractures, chips and cracks." Neither of these features are disclosed by Wentorf, Jr. et al.

The Examiner rejected claims 9-12, 13, 15-19 and 21-26 under 35 USC § 103(a) as being unpatentable over Wentorf, Jr. et al. Claims 9, 12, 13 and 15-19 are directly or indirectly dependent from claim 1. Consequently, these claims are also allowable over Wentorf, Jr. et al. for the same reasons as claim 1 and for the additional limitations they contain therein.

Claim 21 is directed to a method for forming an ultra hard layer which comprises "disposing a liner within said enclosure; placing ultra hard material feed within said enclosure; . . .

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placing a substrate material within said enclosure over the feed stock, wherein the substrate material is different from the material forming the liner; and sintering to convert such ultra hard material feed stock to a solid ultra hard layer, wherein during sintering the liner forms a eutectic having a melting temperature and wherein the substrate forms a eutectic having a melting temperature, wherein the melting temperature of the liner formed eutectic is within 310°C of the substrate formed eutectic." Wentorf, Jr. et al. does not disclose placing a substrate over the ultra hard material feed stock within an enclosure. Nor does Wentorf, Jr. et al. disclose that during sintering the alleged liner forms a eutectic having a melting temperature and the substrate forms a eutectic having a melting temperature, wherein the melting temperature of the liner formed eutectic is within 310°C of substrate formed eutectic. As such, for either of the aforementioned reasons, Wentorf, Jr. et al. does not anticipate claim 21.

Claim 22 is dependent from claim 21. Thus, applicant submits that claim 22 is also not anticipated by Wentorf, Jr. et al. as being dependent from a claim allowable over Wentorf, Jr. et al. and for the additional limitations it contains therein.

Claim 23 is directed to a method for forming an ultra hard layer comprising "disposing a liner within said enclosure; . . . wherein during sintering the liner forms a plastically deformable region for preventing the formation of cracks on the ultra hard material adjacent said plastic deformable region during a cooling phase of said sintering." Wentorf, Jr. et al. does not disclose, teach or suggest that the alleged liner forms

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a plastic deformable region which prevents the formation of cracks on the ultra hard material adjacent such region as required by claim 23. As such, applicant submits that claim 23 is also not anticipated by Wentorf, Jr. et al.

Claims 24-26 are dependent from claim 23. As such, applicant submits that these claims are also allowable over Wentorf, Jr. et al. as being dependent from claim allowable over Wentorf, Jr. et al. and for the additional limitations they contain therein.

Claims 27-34 have been added. Claims 27 and 28 are dependent from claim 1. Claims 29-32 are dependent from claim 21. Claim 33 is dependent from claim 23. Claims 1, 21 and 23 are believed to be in condition for allowance over Wentorf, Jr. et al. As such, applicant submits that claims 27-33 are also allowable over Wentorf, Jr. et al. as being dependent from claims allowable over Wentorf, Jr. et al. and for the additional limitations they contain therein.

Claim 34 is directed to a method for forming an ultra hard material layer comprising "disposing a liner within said enclosure; . . . sintering to convert said ultra hard material feed stock together with said liner to a solid ultra hard material layer." Wentorf, Jr. et al. discloses that after sintering a composite wire drawing die is formed having an ultra hard material core surrounded by a mass of metal bonded carbide (the alleged liner). However, after sintering, the alleged liner of Wentorf, Jr. et al. along with the ultra hard material core does not convert to an ultra hard material layer. The liner disclosed by Wentorf, Jr. et al. remains as a mass of

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carbide. As such, claim 34 is also not anticipated by Wentorf, Jr. et al.

The rejections to all claims pending in this application are believed to have been overcome and this application is now believed to be in condition for allowance. Should the Examiner have any remaining questions or concerns about the allowability of this application, the Examiner is kindly requested to call the undersigned attorney to discuss them.

Respectfully submitted,  
CHRISTIE PARKER & HALE, LLP

By 

Constantine Marantidis  
Reg. No. 39,759  
626/795-9900

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